CLAIMS

1. A process of treating internal combustion engine exhaust gas containing O_2, NOx unburnt hydrocarbon ("HC"), CO and soot, comprising:
i. oxidising a substantial part of the HC, with possibly some oxidation of NO to NO_2;
ii. treating the product of step i to oxidise NO to NO_2;
iii. collecting soot; and
iv. combusting the collected soot by reaction with the NO_2 and possibly any O_2 left over after steps i and ii.

2. Process according to claim 1 in which at least steps i and ii are effected catalytically.

3. Process according to claim 1 or claim 2 carried out over:
i a first catalyst adapted to be fed with engine exhaust gas and effective to promote oxidation of HC therein;
ii a second catalyst adapted to be fed with the product of i and effective to promote oxidation of NO to NO_2;
iii a filter effective to collect soot and to retain it until combusted by said NO_2 and any O_2 left over after catalyst i and ii.

4. Process according to claim 3 in which the catalysts are honeycomb-supported.

5. Process according to claim 4 in which the cell density of the honeycomb is in the range 100-900 per square inch.

6. Process according to any one of the preceding claims, wherein the HC is in gaseous form.

7. Process according to claim 6 in which the first oxidation is carried out close to the source of exhaust gas, whereby to obtain a maximum convenient operating temperature and reaction rate.

8. Process according to claim 6 or claim 7 in which the gas leaving step/catalyst i undergoes cooling and then enters step/catalyst ii.

9. Process according to any one of the claims 6,7, and 8, including the provision of combustible upstream of the step catalyst i, whereby to increase the temperature at which that step operates.

10. Process according to claim 9 in which said combustible is provided by modifying engine settings to pass more HC and/or generate more CO.

11. Process according to any one of the claims 6 to 10 in which the first catalyst has a very low light-off temperature for HC and CO oxidation.

12. A process according to any one of claims 1 to 5, wherein the HC is absorbed on the soot.

13. Process according to any one of the preceding claims including also NOx-removal downstream of soot combustion.

14. Process according to claim 13 including also a regenerable NOx absorber downstream of the collecting trap.

15. Process according to claim 14 including catalytic NOx-removal downstream of the NOx absorber.

16. System for carrying out a process according to any one of the preceding claims comprising:

i. a first catalyst to receive engine exhaust and effective to promote oxidation of HC therein;

ii. a second catalyst receiving the product of the first catalyst and effective to promote oxidation of NO to NO_2;

iii a filter effective to collect soot and to retain it until combusted by reaction with said NO_2 and, depending upon conditions, any O_2 left over after the first

catalyst.

17. System according to claim 16 in which the catalysts are honeycomb-supported.

18. System according to claim 17 in which the cell density of the honeycomb is in the range 100-900 per square inch.

19. A diesel engine in combination with a system according to any one of claims 16 to 18 connected to its exhaust.

20. An engine according to claim 19 which is one designed for light duty applications.

21. An engine according to claim 20 which is of the turbo-charged direct injection type.

22. An engine combination according to claim 19, which is a heavy duty engine.

23. An engine combination according to claim 22, wherein the first catalyst is positioned close to the second catalyst.

24. An engine combination according to claim 23, wherein the first catalyst and the second catalyst are at opposite ends of a single catalyst monolith.